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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,647	08/28/2001	Shigeru Umehara	N99147USDIV	5529

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MCGINN & GIBB, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER

ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 12/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Election/Restrictions

Applicant's election without traverse of claims 16-23 in the Paper filed on September 26, 2003 is acknowledged.

Specification

The disclosure is objected to because of the following informalities: the term "semispherical" should recite "hemispherical".

Appropriate correction is required.

Claim Objections

Claims 16-23 are objected to because of the following informalities: claims 5-21 have been renumbered as claims 7-23. The claim numbers should be changed to reflect this and to correct the claim dependencies. As to claim 18, note that the term "coupled" is a broad term and does not cite that the plurality of surfaces are directly coupled to each other. In claim 22, the term "semispherical" should recite "hemispherical". In claim 23, the term "concave" should also recite - - in a direction from an exterior view of an interior view of an inner chamber- - in order to be consistent with claim 20.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 16-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, line 3; claims 17 and 19, line 1, the term "smooth" is a relative term that renders the metes and bounds of the claim unclear. It may be simply deleted.

In claim 20, it appears that the claim dependency should be on claim 17 (renumbered from claim 15), otherwise "said plurality of arcuate portions" lacks proper antecedent basis.

In claim 21, it is unclear where the plurality of ink outlet passages are located. Are they from the chamber plate, or a separate nozzle plate? It is also unclear how a plurality (presumably more than two) ink outlet passages form only a *pair* of parallel rows, instead of a plurality of parallel rows. It is also unclear how the plurality of ink outlet passages communicate with only one pressure generating chamber, instead of a corresponding plurality of chambers.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

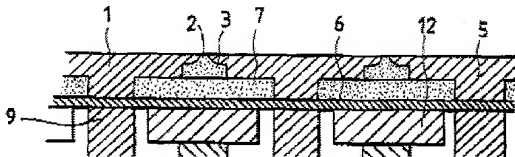
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 16, 21-22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kitahara (US 5,646,662).

Kitahara discloses a method for manufacturing an ink jet recording head, comprising:

forming a pressure generating chamber 7 from a chamber plate with a pair of sides such that said pair of sides are substantially smooth surfaces (Fig.2), and

FIG. 2

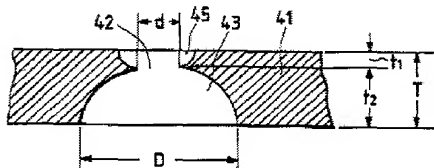


forming a plurality of ink outlet passages arranged into a pair of parallel rows (see Fig.2),

wherein said plurality of ink outlet passages 2, 3 communicate with said pressure generating chamber, and

wherein said plurality of ink outlet passages comprise an upper passage portion 45 and a lower passage portion 43, and said upper and lower portions are each substantially hemispherical (Fig.7).

FIG. 7



Claims 16, 21-22 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Chong (US 6,093,330).

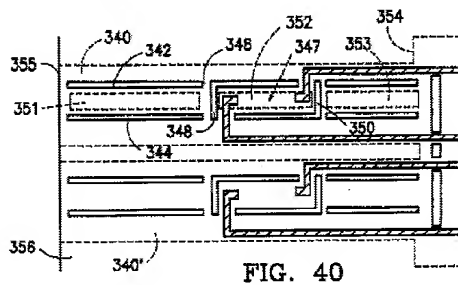
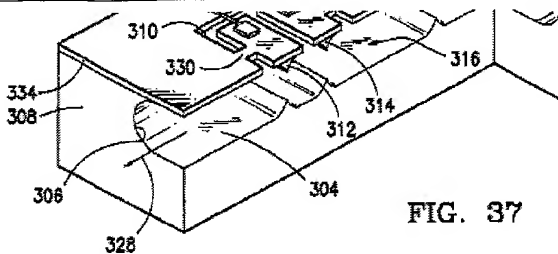
Chong discloses a method for manufacturing an ink jet recording head (Fig.37-40), comprising:

forming a pressure generating chamber (passageway through which ink flows from 300 to 306 in Fig.37 with pressure generated from heating by 320-322; analogous to 340 and 340' in Fig.40) from a chamber plate 302 with a pair of sides such that said pair of sides are substantially smooth surfaces (Fig. 37), and

forming a plurality of ink outlet passages 340, 340' (Fig.40) arranged into a pair of parallel rows,

wherein said plurality of ink outlet passages communicate with said pressure generating chamber, and

wherein said plurality of ink outlet passages comprise an upper passage portion (top half surface of passageway, cross section seen as end face 308 in Fig.37) and a lower passage portion (bottom half surface of passageway, cross section seen as end face 308 in Fig. 37), and said upper and lower portions are each substantially hemispherical.



Claims 16-21, 23 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Farnaam (US 6,036,874).

Farnaam discloses a method for manufacturing an ink jet recording head, comprising:
forming a pressure generating chamber 531 from a chamber plate with a pair of sides such that said pair of sides are substantially smooth surfaces (Fig.5D).

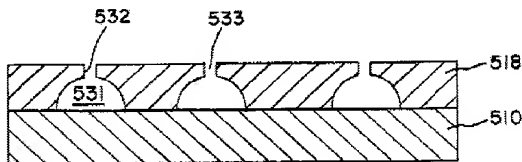


Fig. 5D

As to claims 17-18, Farnaam discloses that the chamber comprises a plurality of arcuate portions (the curved sidewalls of 531), which, broadly interpreted, are coupled to each other (via surface 510).

As to claim 19, Farnaam discloses that the smooth surfaces are devoid of a right angle portion (see Fig. 5D).

As to claims 20 and 23, Farnaam discloses that the plurality of smooth surfaces comprises a convex or concave, depending on whether the direction is from an interior view of an inner chamber or from an exterior view (see Fig. 5D).

As to claim 21, Farnaam discloses that the method further comprises forming a plurality of ink outlet passages 533 arranged into a pair of parallel rows, wherein said plurality of ink outlet passages communicate with said pressure generating chamber (Fig. 5D).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Werner (6397467) appears to be a 102 reference for the claims. Lee (6500354) appears to be a 102 reference for the claims (Fig. 17). Applicant is encouraged to perfect the claim for foreign priority by filing a certified translation of the foreign priority document. Depp (4306951) appears to be a 102 reference for the claims (Fig. 5 and smooth surfaces formed by cavities 17A and 17B). Silverbrook (6019457) appears to be a 102 reference for the claims (Fig. 17 and hemispherical thermal chamber 115, col. 10, lines 11-12). Kubby is cited to show the desirability to use conical sections (col. 2, line 59) for ink jet nozzles. Gamblin (4528070) is

cited to show hemispherical nozzle plates (Fig. 1e). JP 09-277527 A is cited to show a chamber plate 30 with a convex part (see Derwent abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708 (starting December 11, 2003, 571-272-1458). The examiner can normally be reached on Mon, Tues & Fri: 8:30 am-5 pm; Wed&Thurs: 10 am-2 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 703-305-2667 (571-272-1465 starting December 11, 2003). The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Anita K. Alanko
Anita K Alanko
Primary Examiner
Art Unit 1765